Industrial revolution

Several influences came together at the same time to revolutionise Britain's industry: money, labour, a greater demand for goods, new power, and better transport.

By the end of the eighteenth century, some families had made huge private fortunes. Growing merchant banks helped put this money to use.

Increased food production made it possible to feed large populations in the new towns. These populations were made up of the people who had lost their land through enclosures and were looking for work. They now needed to buy things they had never needed before. In the old days people in the villages had grown their own food, made many of their own clothes and generally managed without having to buy very much. As landless workers these people had to buy food, clothing and everything else they needed. This created an opportunity to make and sell more goods than ever before. The same landless people who needed these things also became the workers who made them.

By the early eighteenth century simple machines had already been invented for basic jobs. They could make large quantities of simple goods quickly and cheaply so that "mass production" became possible for the first time. Each machine carried out one simple process, which introduced the idea of "division of labour" among workers. This was to become an important part of the industrial revolution.

By the 1740s the main problem holding back industrial growth was fuel. There was less wood, and in any case wood could not produce the heat necessary to make iron and steel either in large quantities or of high quality. But at this time the use of coal for changing iron ore into good quality iron or steel was perfected, and this made Britain the leading iron producer in Europe. This happened only just in time for the many wars in which Britain was to fight, mainly against France, for the rest of the century. The demand for coal grew very quickly. In 1800 Britain was producing four times as much coal as it had done in 1700, and eight times as much iron.

Increased iron production made it possible to manufacture new machinery for other industries. No one saw this more clearly than John Wilkinson, a man with a total belief in iron. He built the largest ironworks in the country. He built the world's first iron bridge, over the River Severn, in 1779. He saw the first iron boats made. He built an iron chapel for the new Methodist religious sect, and was himself buried in an iron coffin. Wilkinson was also quick to see the value of new inventions. When James Watt made a greatly improved steam engine in 1769, Wilkinson improved it further by making parts of the engine more accurately with his special skills in ironworking. In this way the skills of one craft helped the skills of another. Until then steam engines had only been used for pumping, usually in coal mines. But in 1781 Watt produced an engine with a turning motion, made of iron and steel. It was a vital development because people were now no longer dependent on natural power.

One invention led to another, and increased production in one area led to increased production in others. Other basic materials of the industrial revolution were cotton and woollen cloth, which were popular abroad. In the middle of the century other countries were buying British uniforms, equipment and weapons for their armies. To meet this increased demand, better methods of production had to be found, and new machinery was invented which replaced handwork. The production of cotton goods had been limited by the spinning process, which could not provide enough cotton thread for the weavers. In 1764 a spinning machine was invented which could do the work of several hand spinners, and other improved machines were made shortly after. With the far greater production of cotton thread, the slowest part of the cotton clothmaking industry became weaving. In 1785 a power machine for weaving revolutionised clothmaking. It allowed Britain to make cloth more cheaply than elsewhere, and Lancashire cotton cloths were sold in every continent. But this machinery put many people out of work. It also changed what had been a "cottage industry" done at home into a factory industry, where workers had to keep work hours and rules set down by factory owners.

In the Midlands, factories using locally found clay began to develop very quickly, and produced fine quality plates, cups and other china goods. These soon replaced the old metal plates and drinking cups that had been used. Soon large quantities of china were being exported. The most famous factory was one started by Josiah Wedgwood. His high quality bone china became very popular, as it still is.

The cost of such goods was made cheaper than ever by improved transport during the eighteenth century. New waterways were dug between towns, and transport by these canals was cheaper than transport by land. Roads, still used mainly by people rather than by goods, were also improved during the century. York, Manchester and Exeter were three days' travel from London in the 1720s, but by the 1780s they could be reached in little over twenty-four hours. Along these main roads, the coaches stopped for fresh horses in order to keep up their speed. They became known as "stage" coaches, a name that became famous in the "Wild West" of America. It was rapid road travel and cheap transport by canal that made possible the economic success of the industrial revolution.

Soon Britain was not only exporting cloth to Europe. It was also importing raw cotton from its colonies and exporting finished cotton cloth to sell to those same colonies.

The social effects of the industrial revolution were enormous. Workers tried to join together to protect themselves against powerful employers. They wanted fair wages and reasonable conditions in which to work. But the government quickly banned these "combinations", as the workers' societies were known. Riots occurred, led by the unemployed who had been replaced in factories by machines. In 1799 some of these rioters, known as Luddites, started to break up the machinery which had put them out of work. The government supported the factory owners, and made the breaking of machinery punishable by death. The government was afraid of a revolution like the one in France.

Society and religion

Britain avoided revolution partly because of a new religious movement. This did not come from the Church of England, which was slow to recognise change. Many new industrial towns in fact had no church or priests or any kind of organised religion. The Church of England did not recognise the problems of these towns, and many priests belonged to the gentry and shared the opinions of the government and ruling class.

The new movement which met the needs of the growing industrial working class was led by a remarkable man called John Wesley. He was an Anglican priest who travelled around the country preaching and teaching. In 1738 Wesley had had a mystical experience. "I felt my heart strangely warmed," he wrote afterwards, "I felt that I did

trust in Christ, Christ alone for my salvation; and an assurance was given that he had taken *my* sins, even *mine*, and saved me from sin and death." For fifty-three years John Wesley travelled 224,000 miles on horseback, preaching at every village he came to. Sometimes he preached in three different villages in one day. Very soon others joined in his work. John Wesley visited the new villages and industrial towns which had no parish church.

John Wesley's "Methodism" was above all a personal and emotional form of religion. It was organised in small groups, or "chapels", all over the country. At a time when the Church of England itself showed little interest in the social and spiritual needs of the growing population, Methodism was able to give ordinary people a sense of purpose and dignity. The Church was nervous of this powerful new movement which it could not control, and in the end Wesley was forced to leave the Church of England and start a new Methodist Church.

By the end of the century there were over 360 Methodist chapels, most of them in industrial areas. These chapels were more democratic than the Church of England, partly because the members of each chapel had to find the money to pay for them. The Anglican Church, on the other hand, had a good income from the land it owned.

John Wesley was no friend of the ruling classes but he was deeply conservative, and had no time for radicalism. He disapproved of Wilkes and thought the French Revolution was the work of the devil. "The greater the share the people have in government," he wrote, "the less liberty, civil or religious, does a nation enjoy." He carefully avoided politics, and taught people to be hardworking and honest. As a result of his teaching, people accepted many of the injustices of the times without complaint. Some became wealthy through working hard and saving their money. As an old man, Wesley sadly noted how hard work led to wealth, and wealth to pride and that this threatened to destroy his work. "Although the form of religion remains," he wrote, "the spirit is swiftly vanishing away." However, Wesley probably saved Britain from revolution. He certainly brought many people back to Christianity.

The Methodists were not alone. Other Christians also joined what became known as "the evangelical revival", which was a return to a simple faith based on the Bible. It was almost a reawakening of Puritanism, but this time with a social rather than a political involvement. Some, especially the Quakers, became well known for social concern. One of the best known was Elizabeth Fry, who made public the terrible conditions in the prisons, and started to work for reform.

It was also a small group of Christians who were the first to act against the evils of the slave trade, from which Britain was making huge sums of money. Slaves did not expect to live long. Almost 20 per cent died on the voyage. Most of the others died young from cruel treatment in the West Indies. For example, between 1712 and 1768 200,000 slaves were sent to work in Barbados, but during this period the population of Barbados only increased by 26,000.

The first success against slavery came when a judge ruled that "no man could be a slave in Britain", and freed a slave who had landed in Bristol. This victory gave a new and unexpected meaning to the words of the national song, "Britons never shall be slaves." In fact, just as Britain had taken a lead in slavery and the slave trade, it also took the lead internationally in ending them. The slave trade was abolished by law in 1807. But it took until 1833 for slavery itself to be abolished in all British colonies.

Others, also mainly Christians, tried to limit the cruelty of employers who forced children to work long hours. In 1802, as a result of their efforts, Parliament passed the first Factory Act, limiting child labour to twelve hours each day. In 1819 a new law forbade the employment of children under the age of nine. Neither of these two Acts were obeyed everywhere, but they were the early examples of government action to protect the weak against the powerful.

The influence of these eighteenth-century religious movements continued. A century later, when workers started to organise themselves more effectively, many of those involved had been brought up in Methodist or other Nonconformist sects. This had a great influence on trade unionism and the labour movement in Britain.

Revolution in France and the Napoleonic Wars

France's neighbours only slowly realised that its revolution in 1789 could be dangerous for them. Military power and the authority of kingship were almost useless against revolutionary ideas.

In France the revolution had been made by the "bourgeoisie", or middle class, leading the peasants and urban working classes. In England the bourgeoisie and the gentry had acted together for centuries in the House of Commons, and had become the most powerful class in Britain in the seventeenth century. They had no sympathy with the French revolutionaries, and were frightened by the danger of "awakening" the working classes. They saw the danger of revolution in the British countryside, where the enclosures were happening, and in the towns, to which many of the landless were going in search of work. They also saw the political dangers which could develop from the great increase in population.

Several radicals sympathised with the cause of the French revolutionaries, and called for reforms in Britain. In other countries in Europe such sympathy was seen as an attack on the aristocracy. But in England both the gentry and the bourgeoisie felt they were being attacked, and the radicals were accused of putting Britain in danger. Tory crowds attacked the homes of radicals in Birmingham and several other cities. The Whig Party was split. Most feared "Jacobinism", as sympathy with the revolutionaries was called, and joined William Pitt, "the Younger" (the son of Lord Chatham), while those who wanted reform stayed with the radical Whig leader, Charles James Fox. In spite of its small size, Fox's party formed the link between the Whigs of the eighteenth century and the Liberals of the nineteenth century.

Not all the radicals sympathised with the revolutionaries in France. In many ways Edmund Burke was a conservative, in spite of his support for the American colonists in 1776. He now quarrelled with other radicals, and wrote *Reflections on the Revolution in France*, which became a popular book. He feared that the established order of kings in Europe would fall. Tom Paine, who had also supported the American colonists, wrote in answer *The Rights of Man*, in which he defended the rights of the ordinary people against the power of the monarchy and the aristocrats. The ideas in this book were thought to be so dangerous that Paine had to escape to France. He never returned to Britain. But the book itself has remained an important work on the question of political freedom.

These matters were discussed almost entirely by the middle class and the gentry. Hardly any working-class voices were heard, but it should be noted that the first definitely working-class political organisation, the Corresponding Society, was established at this time. It did not last long, because the government closed it down in 1798, and it only had branches in London, Norwich, Sheffield, Nottingham and one or two other centres.

The French Revolution had created fear all over Europe. The British government was so afraid that revolution would spread to Britain that it imprisoned radical leaders. It was particularly frightened that the army would be influenced by these dangerous ideas. Until then, soldiers had always lived in inns and private homes. Now the government built army camps, where soldiers could live separated from the ordinary people. The government also brought together yeomen and gentry who supported the ruling establishment and trained them as soldiers. The government claimed that these "yeomanry" forces were created in case of a French attack. This may have been true, but they were probably useless against an enemy army, and they were used to prevent revolution by the poor and discontented.

As an island, Britain was in less danger, and as a result was slower than other European states to make war on the French Republic. But in 1793 Britain went to war after France had invaded the Low Countries (today, Belgium and Holland). One by one the European countries were defeated by Napoleon, and forced to ally themselves with him. Most of Europe fell under Napoleon's control.

Britain decided to fight France at sea because it had a stronger navy, and because its own survival depended on control of its trade routes. British policy was to damage French trade by preventing French ships, including their navy, from moving freely in and out of French seaports. The commander of the British fleet, Admiral Horatio Nelson, won brilliant victories over the French navy, near the coast of Egypt, at Copenhagen, and finally near Spain, at Trafalgar in 1805, where he destroyed the French–Spanish fleet. Nelson was himself killed at Trafalgar, but became one of Britain's greatest national heroes. His words to the fleet before the battle of Trafalgar, "England expects that every man will do his duty," have remained a reminder of patriotic duty in time of national danger.

In the same year as Trafalgar, in 1805, a British army landed in Portugal to fight the French. This army, with its Portuguese and Spanish allies, was eventually commanded by Wellington, a man who

had fought in India. But fighting the French on land was an entirely different matter. Almost everyone in Europe believed the French army, and its generals, to be the best in the world. Wellington was one of the very few generals who did not. "I am not afraid of them," he wrote on his appointment as commander. "I suspect that all the Continental armies were more than half beaten before the battle was begun. I, at least, will not be frightened beforehand." Like Nelson he quickly proved to be a great commander. After several victories against the French in Spain he invaded France. Napoleon, weakened by his disastrous invasion of Russia, surrendered in 1814. But the following year he escaped and quickly assembled an army in France. Wellington, with the timely help of the Prussian army, finally defeated Napoleon at Waterloo in Belgium in June 1815.